

**SIGNAL MEASUREMENT APPARATUS AND METHOD****Abstract of the Disclosure**

Ground bounce measurement circuitry, integrated circuit packaging, memory  
5 circuit modules, circuit cards, and systems, and methods to form, assemble, and use  
them are provided. A circuit combination is disclosed which includes an integrated  
circuit and measurement circuit, constructed so that each may be supported by a  
single substrate, or enclosed within a single integrated circuit package. The  
integrated circuit includes a test domain having a test voltage, and a reference  
10 domain having a reference voltage. The measurement circuit is operatively  
connected to the reference domain and the test domain to measure the ground  
bounce voltage, which is the difference between the test voltage and the reference  
voltage. The measured value of the ground bounce voltage can then be acquired by  
a data acquisition system for later recall, or made immediately available for  
15 observation using instrumentation outside of the substrate or integrated circuit  
package environment.

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